

young *G. carinifera*. The species designated by Verrill under the former of these names consequently remains undetermined. Lastly, Gray's *Petalastres* are true *Luidia*.

I may add that I cannot doubt the identity of the *Luidia senegalensis*, Müll. & Tr., and the *Goniaster africanus* of Verrill from the African coast, with *L. Marcgravii*, Steenstr., and *G. americanus*, Verrill, of the American shore. *Asterina stellifera*, Möbius, and *Linckia Guildingii* are likewise common to both shores.

To sum up: with 200 species, represented by about 1200 specimens, the collection of the Museum possesses nearly half the known species of true starfish, the number of which, according to the lists that I have prepared, may be estimated at 420. In the work of revision that I have just terminated, I did not think I ought to confine myself to the species of our Museum. I have included all those that I have had an opportunity of examining, making a total of 300 species, including close upon 2500 specimens, as to which I have brought together precise information, with regard to both their synonymy and their geographical distribution, the origin of each specimen having been carefully ascertained. These species are divided into 46 genera, many of which had to be created or remodelled. A great number of old species which had been very doubtful have been described afresh from the original specimens; and 50 new Stellerida have been added to the list of known species.—*Comptes Rendus*, December 3, 1875, p. 1271.

*On an Amphipod (Urothoë marina), a Commensal of Echinocardium cordatum.* By M. A. GIARD.

The sandy shore that stretches between Wimereux and Ambleteuse furnishes in abundance *Echinocardium cordatum*, known to the fishermen under the name of *œuf de Grisard*. Dr. Robertson has given us some details as to the mode of life of this *Spatangus*\*; but his statements are incomplete and even sometimes incorrect. The urchin lives in the sand at a depth of from 15 to 20 centimetres; it communicates with the surface by two canals of the thickness of a quill, one of which terminates at the central point of the ambulacral star, and the other at the anal aperture. This second canal has not been noticed by Dr. Robertson, who thinks that the sand introduced into the digestive cavity of the animal must be disgorged by the mouth after having served for nutrition, thanks to the organic materials that it contains. The aperture of the anal tube is perfectly circular; that of the apical tube is irregularly three-lobed. The water penetrates by this latter tube, which contains the long contractile filaments ("locomotive feet," "ringed, worm-like suckers"), the movement of which conveys the alimentary particles to the mouth by the anterior furrow. A portion of the water enters through the madreporic plate into the general cavity and aquiferous system. The anal canal serves for the escape of the sand that has traversed the digestive tube. This canal is traversed by a stream of water, the existence of which is difficult to explain, since

\* Quart. Journ. Micr. Sci. xi. p. 25.

there is not, in the neighbourhood of the anus, any aperture belonging either to the cavity of the body or to the aquiferous system. The water rejected by the anal tube is therefore derived from the digestive apparatus. The intestine, stuffed with sand and of extreme thinness, contains tolerably powerful muscular fibres at its anterior part, but which gradually diminish towards the posterior part: I believe that the expulsion of the sand cannot be ascribed solely to these fibres, and that an important part belongs to the organ discovered by Hoffmann, and called by him the "twisted organ" (*gewundenes Organ*). This organ acts as a canal of derivation: it receives the water contained in the sand of the anterior intestine; then by the play of the buccal membrane, and the contraction of the muscles of the first part of the digestive tube, it carries this water into the terminal portion of the apparatus, where it drives before it and carries out the materials accumulated in the posterior intestine. Thus would be explained the anal current and the slow rejection of the sand absorbed; we also understand why no twisted cast is produced, as in *Arenicola*.

The cavity in which the *Echinocardium* is lodged is lined with a glutinous secretion, which was observed by Dr. Robertson. On carefully removing the urchin we almost constantly find, in the sandy gangue cemented by this mucus, three or four small crustaceans, the external aspect of which at once reminds one of the *Hyperia*, the usual commensals of *Rhizostoma Cuvieri*. A more careful examination soon led me to see that these crustaceans belong to the genus *Urothoë* of Dana, and very probably even to the British species described by Spence Bate under the name of *U. marinus*, the differences relating to perfectly secondary characters, and being attributable to less perfect observations than mine. I must, however, indicate one important peculiarity that has escaped the learned authors of the 'History of British Sessile-eyed Crustacea,' namely that *Urothoë marinus* presents a strongly marked sexual dimorphism. The most striking character of the male sex is the length of the inferior antennæ, which greatly exceed the superior ones. It is well known that it is a character of the same kind that distinguishes the male *Hyperia (Lestrigonus)* from their females. This peculiarity, combined with several other analogies derived from their anatomical investigation, supports the prevision of Westwood, who, from the researches of Spence Bate upon the development of certain Hyperinæ, was inclined to think that a more intimate connexion might perhaps be established between these animals and the subfamily Phoxides, to which *Urothoë* belongs.

Among the species of the genus *Urothoë* figured by Spence Bate some present rather short inferior antennæ; in the others, on the contrary, these same organs are of considerable length. With most of these species the descriptions have been drawn up from a very small number of specimens; we may therefore presume that the differences just mentioned are mere sexual characters, and that one sex only has been described for each of the known types. If we accept this opinion, *Urothoë Bairdii* and *Urothoë elegans* must be regarded as representing male individuals; whilst *Urothoë brevicornis* and *Urothoë marinus* are, on the contrary, figured from the

female sex. It is not without interest to add that among the individuals of *Urothoë marinus* forwarded to the authors of the 'British Sessile-eyed Crustacea,' some were from Cumbræ, where they had been collected by Dr. Robertson, the talented zoologist, who, as we have already stated, has investigated the habits of the *Echinocardium* in that same locality. Others were found at Macduff in the stomach of a haddock. Now Alex. Agassiz tells us that the large fishes of the genus *Gadus* are great eaters of sea-urchins. These old observations thus indirectly aid to verify the commensalism of *Urothoë* as ascertained by us.—*Comptes Rendus*, Jan. 3, 1876, p. 76.

*On some new Species of Stomatopod Crustacea.* By J. WOOD-MASON

Mr. Wood-Mason exhibited several new species of Stomatopod crustaceans, viz.:—*Clorida decorata*, with eyes as in *C. microphthalma*, M.-Edw., and *C. Latreillei*, Ey. & Soul., the inner margin of the sabre-like appendage of the lateral portions of the caudal swimmeret armed with fine acuminate spines, and the telson vermiculated above and below with granulated ridges, claw of raptorial arm 5-toothed—from the Andamans; *Coronis spinosa*, with three spines projecting from the telson just above the level of the marginal ones, of which there are three pairs, the median pair movable and smaller than the rest and with the interval between them finely serrated (five or six teeth on each side of the middle line), between these and each lateral pair two spinules, between the teeth of each lateral pair one spinule, claw of raptorial arm 10-toothed—from the Andamans and New Zealand; *Gonodactylus glyptocercus*, allied to *G. trispinosus*, with the telson ornamented with two oval tubercles bounded by an impressed invected line and with a median basal cinquefoil-shaped one, and the two preceding somites symmetrically engraved with fine lines—from the Nicobars; and *Squilla supplex*, with three short oblique ridges on each side of the telson, between which and the strong median ridge on each side a row of confluent tubercles in the same straight line with the two median marginal teeth, five teeth to the claw of the raptorial arms, postabdominal somites with nine ridges, arranged three in the middle and three on each side—from Bombay.—*Proc. Asiat. Soc. Bengal*, December 1875.

“*Ornithological Errors in the ‘Reliquiæ Aquitanicæ.’*”

*To the Editors of the Annals and Magazine of Natural History.*

GENTLEMEN,—With reference to Professor Alfred Newton's Note in the 'Annals & Mag. of Nat. Hist.' for February, pages 168–170, on some ornithological errors in Professor Alphonse Milne-Edwards's memoir on the Bird-remains from the Caves of Périgord, in the 'Reliquiæ Aquitanicæ,' Part xvi., of which I am Editor, responsible for its Translations, I ask permission to state that twelve of the "errors" are evidently discrepancies of fact and opinion between the Author and Prof. A. Newton; and the correction of these M. A. Milne-Edwards acknowledges, with thanks, in his revised reprint of his memoir from the original MS., in the November number of the 'Matériaux pour l'histoire de l'Homme' &c., 1875, p. 473 &c.

Directly after Prof. Newton had read the translated memoir in question, before it was published, he favoured me with his critical